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(54) AMUSEMENT APPARATUS

(75) DENNIS EDWARD BARR

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(56) 42454/72 461097 53.8, 53.6

(57) Claim

1. An amusement apparatus for enabling the construction of three-dimensional structures comprising block means from which the three-dimensional structure may be formed, said block means being provided with interlocking means by which said block means may be releasably interconnected one with another to build an interlocked structure, building platform means provided with at least one starting construction point at which a block means may be interlocked with said building platform means to provide a tie point at which an interlocked structure thereon is interconnected therewith and tiltable support means upon which said building platform means is mounted to enable tilting of said platform means when a structure formed thereon is out of balance.

APPLICATION FOR A STANDARD PATENT OR A STANDARD PATENT OF ADDITION

TRADE MARK
SUB-OFFICE

on 9

I, DENNIS EDWARD BARR
of 27 HOLLHEAD RD UPPER MOUNT CRAWFORD in the
STATE OF QUEENSLAND

hereby apply for the grant of a standard patent
patent-of-addition for an invention entitled

AMUSEMENT APPARATUS

which is described in the accompanying provisional specification.

COMPLETE AFTER PROVISIONAL SPECIFICATION No. 13908/83

(To be included in the case of a Convention application)

Details of basic application(s) -

Number of basic application

Name of Convention country in which basic application was filed

Date of basic application

(To be included in the case of an application made by virtue of section 51)

Number of original application

Person by whom made

(To be included in the case of an application for a patent of addition)

I request that the patent may be granted as a patent of addition to the patent applied for on Application

No. Patent No.

In the name of

I request that the term of the patent of addition be the same as that for the main invention or so much of

the patent for the main invention as is unexpired.

**ADDRESS FOR SERVICE
ALTERED**

My address for service is Post Office Box 331
GRAVATT QUEENSLAND 4122

Dated this 22nd day of APRIL 19 82

To:

THE COMMISSIONER OF PATENTS

(S) Dennis E. Barr
TRAD.
SUB.

22 AF.



This form must be accompanied by either a provisional specification (Form 9 and true copy) or (Form 10 and true copy).

13903/83

Form 1

COMMONWEALTH OF AUSTRALIA

Patents Act 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT

In support of the Application made by DENNIS EDUARD BARR

for a patent for an invention entitled AMUSEMENT APPARATUS

I, DENNIS EDUARD BARR
of 27 HOLMEAD RD WATER MOUNT GRAVATT QUEENSLAND
do solemnly and sincerely declare as follows:-

1. I am the applicant for the patent.

(or, in the case of an application by a body corporate)

1. I am authorized by

the applicant for the patent to make this declaration on its behalf.

2. I am the actual inventor of the invention.

(or, where a person other than the inventor is the applicant)

2.

of

is the actual inventor of the invention and the
facts upon which I am
the is entitled to make the application are as follows:-

TO:

Declared at BRISBANE this 2nd day of APRIL 1982

TO:

THE COMMISSIONER OF PATENTS.

Dennis F Barr
(Signature of Declarant)

563452

PF 3695

P/00/011



PATENTS ACT 1952-1973

Form 10

COMPLETE SPECIFICATION

(ORIGINAL)

FOR OFFICE USE

Class:

Int. Cl:

Application Number:

Lodged:

13903/83

Complete Specification—Lodged:

Accepted:

Published:

Priority:

Related Art:

This document contains the
amendments made under
Section

and is correct for printing.

TO BE COMPLETED BY APPLICANT

Name of Applicant: Dennis Edward Barr

Address of Applicant: 27 Holmead Rd. Upper Mount Gravatt, Qld., 4122

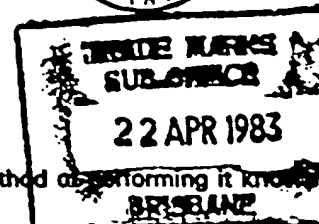
Actual Inventor: Dennis Edward Barr

Address for Service: P.O. Box 237 Upper Mount Gravatt, Qld., 4122

Complete Specification for the invention entitled: An Amusement Apparatus

The following statement is a full description of this invention, including the best method of performing it known to me:—

*Note: The description is to be typed in double spacing, pica type face, in an area not exceeding 250 mm in depth and 180 mm in width.



This invention relates to an amusement apparatus. More particularly, the invention relates to apparatus of the kind wherein one or more players can engage in a game of skill involving their judgement of three-dimensional structures.

5 It is known to provide various kinds of building blocks for the amusement and education of children whereby their involvement with the blocks results in a widening of their understanding of spatial relationships and three dimensional forms. However, with known blocks, producing an unbalanced construction results, usually, in a total collapse of the structure, and, unless memory is brought into play, the child cannot go back to the point before the collapse and experiment with an alternate structural progression.

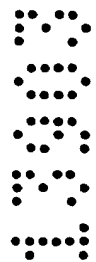
10 The invention has as an object the provision of an amusement apparatus which enables players to produce three-dimensional structures and to continually test the stability of their productions as they progress to greater complexity; to pit their judgement of the structures stability against that of another player, and/or to recover a structure from an unstable condition without destruction of their construct through its collapse.

15 The above objects are broadly achieved in an amusement apparatus for enabling the construction of three dimensional structures comprising block means from which the three dimensional structure may be formed, said block means being provided with an interlocking means by which said block means may be releasably interconnected one with another to build an interlocked structure, building platform means provided with at least one starting construction point at which a block means may be interlocked with said



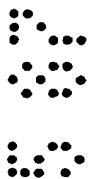
building platform means to provide a tie point at
which an interlocked structure thereon is interconn-
ected therewith and tiltable support means upon which
said building platform means is mounted to enable
5 tilting of said platform means when a structure
formed thereon is out of balance.

The test table may be a flat platform which
continuously, or at any preselected time, tilts to
indicate an out of balance condition from which rec-
10 overy can be made by further developing the construction
with _____

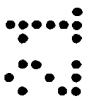


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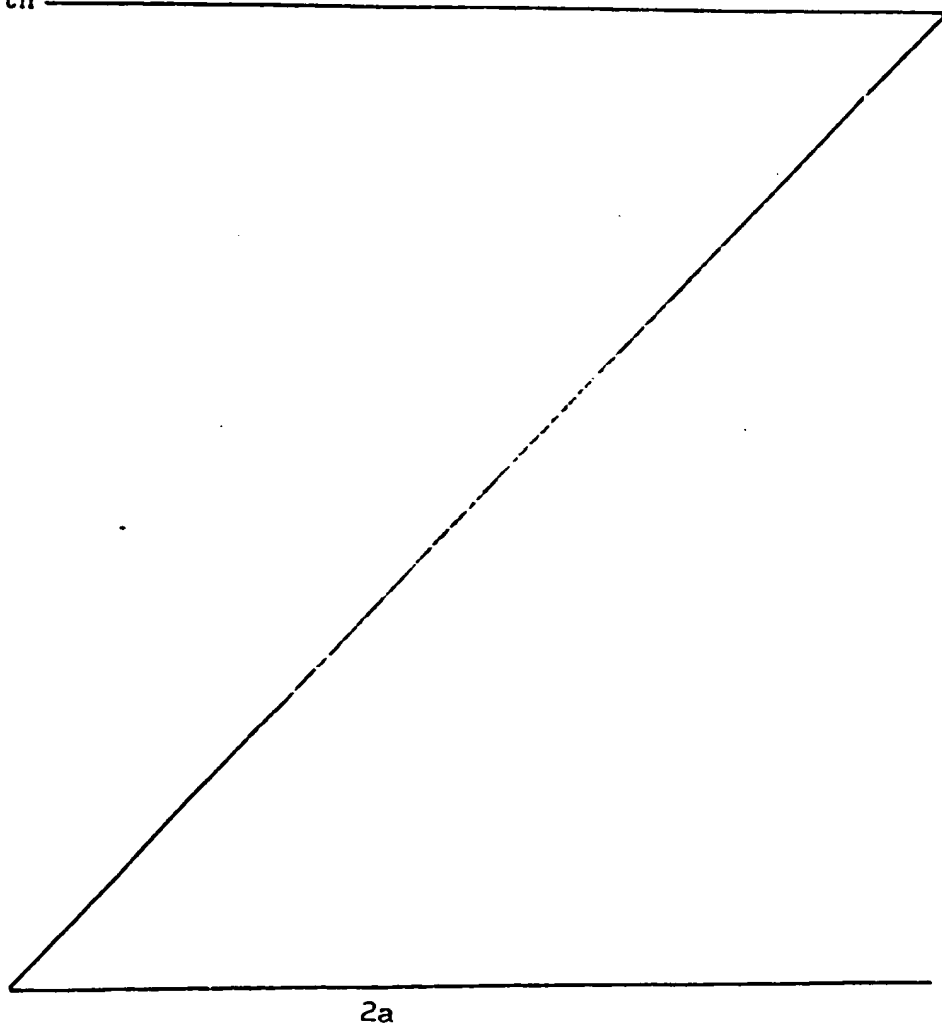
20



25



30



more bricks.

Players may pit their skills against one another in numerous ways. For instance, they may take turns to lay an agreed on number of bricks alternately, to
5 produce an out of balance structure which the next player must right with his quota of bricks.

Individuals may test the stability of their own constructs as they are developed, to produce unusual, three-dimensional shapes that might not otherwise be
10 achieved, through the continuous testing of their state of balance.

The test table may be constructed to be adjusted by various means to produce ever more narrow stability constraints, so that as players improve their skills
15 the apparatus can be adjusted to further test their mettle.

In order that the invention may be more readily understood and put into practical effect, reference will now be made to the accompanying drawings which
20 illustrate preferred embodiments thereof, wherein:

Fig. 1 is a schematic illustration of an apparatus according to the invention.

Fig. 2 shows a particular type of test table.

Figs 3, 4 and 11 show further versions of the
25 test table.

Fig. 5 shows a base board mechanism.

Fig. 6 illustrates a test table with vertical supports.

Figs 7 to 10 and 12 are various playing pieces.

Fig. 13 illustrates a further form of base board.

Fig. 14 shows another playing piece.

Fig. 15 is a sectional view of figure 14.

Fig. 16 is another form of base board.

In Fig. 1, a block structure 23 is shown assembled
35 upon a playing surface 21 supported above a base board 22



on a pivoted mechanism such as a swivel ball joint 24. The base 22 can be resilient plastic to enable removal of the ball joint 24 for packaging and adjustments relating to supports provided for the playing surface as are described below. Alternately, the ball end might merely rest in the bottom of a suitable hole or recess in the base board 22 without provision of any retainer.

In Fig. 2 the playing surface 21 is supported in a horizontal position at its periphery upon springs 25 which provide a bias. Surface 21 is supported upon ball 24 in recess 27 and is held by resilient lips 28. The playing surface 21 requires development of a certain out of balance force, determined by the spring constant of springs 25, to produce an out of balance tilt. The use of springs enables players some leeway in errors of judgement. By interposing springs of various spring constants, the table can be prepared to demand more, or less, skill of a player attempting to build structures. Alternately, positioning of the springs closer to the center support peg of the test table playing surface will provide situations demanding greater playing skills in construction.

Play with the device could be between two players, or more, with the first producing, with a set number of blocks, an out of balance structure which the following player has to bring back to a balanced state by playing a similar number of bricks. If successful, that player can then play a set number of blocks to produce an unbalanced state to be rectified by the next player. A single player can simply continue to build with the tilting of the table warning of any out of balance condition from which he must recover.

In Fig. 3 the test table 22 is held at the horizontal by clamps 29 operated by push buttons 30 to release the table. Here, the out of balance forces are



masked until the rules of play allow the buttons to be pushed to test the structure's balance. Thus, by requiring play of greater numbers of blocks before the buttons are pushed and the table released to reveal unbalanced conditions allows judgemental skills to be challenged at higher levels.

In Figs 4 and 5 the springs 25 can be replaced by pegs 26 which can be mounted on shafts 32 in slots 33 of base board 22. By removing the shafts, the positions of pegs 26 is adjusted to provide more, or less, stability for the playing surface 22 resting upon them. greater tolerances towards unstable structures can thereby be set for less skilled players.

In Fig. 11 the pegs 49 can be simply inserted into various holes 50 provided in base board 22 for that purpose. By spacing the pegs widely, greater stability is keyed into the playing surface. By choice of the peg height, the amount of tilt of the playing surface is limited so as not to completely topple the structure because the edge of the tilting test table will rest upon the base board allowing players to recover a balanced condition. In this manner a simple construction of a game apparatus according to the invention is achieved.

In order to play the game, it is preferred to use lockable blocks so that when a structure is tilted it does not fall apart. The game can then be continued with the same structure to bring it back to stability. To this end Figs 7 to 10 and 12 illustrate various forms of locking blocks which may be employed in the present invention.

The blocks of Fig.7 are slid together so that a raised portion 36 is received in recess37.

In Fig. 8 the projection of one block is



inserted into recess 39 of another.

In Fig. 9 a magnet 43 operating through pole pieces with a concave recess 41 on one block receives and holds a ball 42 on another.

5 In Fig. 10 a magnet 45 is attracted to plates 47 and the position of two mating blocks is restricted by ridges 46.

10 Preferably the blocks are structured to go together in fixed conjunctions one to the other so that the players can calculate just how out of balance a piece of the structure is because of the unit nature of each block's interaction with its fellows. Blocks such as in Fig. 9 will sit atop one another in variable positions that will make it hard for a child player to judge the cumulative effect of many stacked blocks.

15 In Fig. 6 is shown a block structure constructed with the aid of vertical support rods such as 70, 71 and 73. Rods 70 and 71 can be inserted into rod receiving holes in the test table 21. These rods provide a means whereby blocks such as 75, 76 and 77 can be stacked vertically and locked against tumbling down. Elongated blocks such as 72 and 74 may be provided with a through hole at one end for threading down the vertical support rod and a hole penetrating only part way through at the other end to provide for receipt of
20 another vertical supporting rod such as 73.

25 In Fig. 6 four support rods may be provided centrally of the test table 21 such that blocks provided with two holes may be threaded down over the rods to be locked against rotation about the rods.
30 Similarly at the other end of the cantilevered, elongated blocks an array of four support recesses may be



provided.

Thus, in its simplest form the apparatus may comprise a base board drilled with peg recesses, a set of pegs to support a test table, a test table drilled to receive vertical support rods, a set of vertical support rods and blocks drilled therethrough to be located on the support rods with various elongated blocks additionally provided with arrays of recesses to receive further vertical support rods. This collection of game pieces might be provided in timber, or cast in plastic. Further, curved or arched blocks might be provided to enable more fanciful block structures. A locating peg with an end ball joint to be received in a central recess of the board's base might be provided to centralise the test table on the base board. To control the tilt of the table, springs may be added to the set to control the test table tilt, with springs advantageously of the same diameter as the pegs for insertion into the peg holes in its base board.

Game progress might be controlled by varying the arrangements of holes and recesses in various blocks which can be randomly drawn, sight unseen, from say, an opaque bag to randomise a player's pieces and therefore, the progress of the game.

Alternately, blocks might be provided with square arrays of through inserted rods of magnetised material to lock the blocks to one another, the arrays being devised to locate the blocks in fixed geometric arrangements one to another.

Fig. 13 shows an alternate form of the amusement apparatus in which a base board 80, upon which towers 85 may be built, as hereinafter described, is provided with a number of curved rail means 81 to 84 upon which



the board rests. The curve of the rails may provide a stable center support arranged so that a degree of imbalance must be developed before the test table tilts whereupon the curve of the rail means is such as to restrict the amount of tilt. The rails might be provided in such manner that they may slide in slots in the board bottom to increase the amount of inherent stability in the resting board. The rails may be three or four in number, four being shown in Fig. 13. Use of rails on a base board as in Fig. 13 will overcome a problem arising when a freely tilting table is used and an out of balance condition is being corrected. Over correction, a correction that creates a new out of balance condition may cause a simple rolling motion of the table to a new out of balance position such as to mask the fact that an over correction has been made from an inexperienced player. A tilted tower on a board as in Fig. 13 will rest upon two rails and a resistance to rolling onto another pair of rails will exist such that a tower will tend first towards the vertical from which it will then tip to its new out of balance condition to more clearly indicate what has occurred.

Fig. 14 shows a flat disc-like playing piece 90 provided with a number of slots 91 about its perimeter thereof. The pieces may be round, square, hexagonal, etc, and may be provided with any number of slots 91 to enable them to be slotted into one another to build up a structure. In order that the pieces are interlocked they may be formed of a resilient plastic with inward projections 92 and 93 at the mouth of the slot which engage in corresponding indentations 94 to lock two inter-locked blocks together. Employing a resilient material in making the pieces would enable players



to join the pieces with a minimum of fuss. The block is seen in sectional view in Fig. 15.

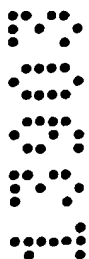
5 Fig. 16 shows another playing table 100 above a base board 101. The boards are spaced by means 102 which may be a spring means such as a coil spring or a rubber rod. Additionally, a foam resilient material might form a peripheral spring 103. A cross section such as that shown increases its spring constant as the table lays over as more of the foam material comes into play to be compressed by the tilting table. An increasing spring constant has advantages in controlling the tilt of structures which might otherwise go so far over as to tip the whole base structure over on its side. A foam spring may be circular about the table periphery and its radius might be chosen to control its effectiveness. A suitable cross section for a foam spring is shown as item 103 in Fig. 16.

10 While the above has been given by way of example many modifications and variations as would be apparent to persons skilled in the art may be made thereto without departing from the broad scope and ambit of the invention as herein set forth and claimed in the following claims.

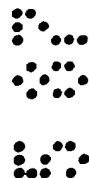


THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An amusement apparatus for enabling the construction of three-dimensional structures comprising block means from which the three-dimensional structure may be formed, said block means being provided with interlocking means by which said block means may be releasably interconnected one with another to build an interlocked structure, building platform means provided with at least one starting construction point at which a block means may be interlocked with said building platform means to provide a tie point at which an interlocked structure thereon is interconnected therewith and tilt-able support means upon which said building platform means is mounted to enable tilting of said platform means when a structure formed thereon is out of balance.



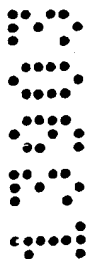
2. An amusement apparatus as claimed in claim 1 wherein said interlocking means comprises interlocking rods passed through various ones of said block means which are provided with an array of holes passing either partially or totally therethrough for the receipt of various length rods therein so as to hold said block means one upon the other in a three-dimensional structure thereof in order that said structure does not fall apart when in a tilted position.



3. An amusement apparatus as claimed in claim 1 wherein said interlocking means is one of; male and female interference fitted projections and recesses formed in various sides of said block means to enable the interconnection of one or more block means; slidably engaging mating outwardly directed projections and corresponding shaped recesses on various faces of said



- 10 block means having cross-sections locking said projections within said recesses except in the direction of sliding whereby various ones of said block means may be interconnected; magnetic means comprising magnetic and magnetically susceptible material in various faces of said block means such that various ones of said
- 15 block means may be interconnected via magnetic attraction of magnet to magnet or magnet to susceptible material said block means being formed with or without interengaging surface features to interlock said block means in precise geometric positions.



- 5 4. An amusement apparatus as claimed in any one of the preceding claims wherein said building platform means is a plate-like sheet of material being formed with a perimeter which may be round, triangular, hexagonal, or any multi-sided geometric shape and said tiltable support means is a central peg means engaging a base beneath to support said building platform means thereabove so that it may tilt upon said peg means and resiliently deformable means being provided between said platform and said base to control the tilting of said platform.
- 10



- 5 5. An amusement apparatus as claimed in claim 4 wherein said resiliently deformable means comprises a foamed rubber-like material.



- 5 6. An amusement apparatus as claimed in claim 5 wherein said resiliently deformable means is formed with a cross-section along a line radially through said peg means which is wedge shaped so that a progressively greater amount of said material comes into operation as said platform tilts over.



7. An amusement apparatus as claimed in claim 4 wherein platform engaging means are provided by which said platform is held horizontal until such time as the platform engaging means are disengaged to enable said platform to tilt.

8. An amusement apparatus as claimed in any one of claims 4 to 7 wherein said tiltable support means also comprises adjustable means whereby an amount of inherent stability may be set for said platform means so that tilting of said platform only occurs at a predetermined degree of out of balance condition in any structure constructed thereupon.

9. An amusement apparatus substantially as herein before defined with reference to the accompanying drawings.

dated this 20 th. day of May 1987

Dennis Edward Barr



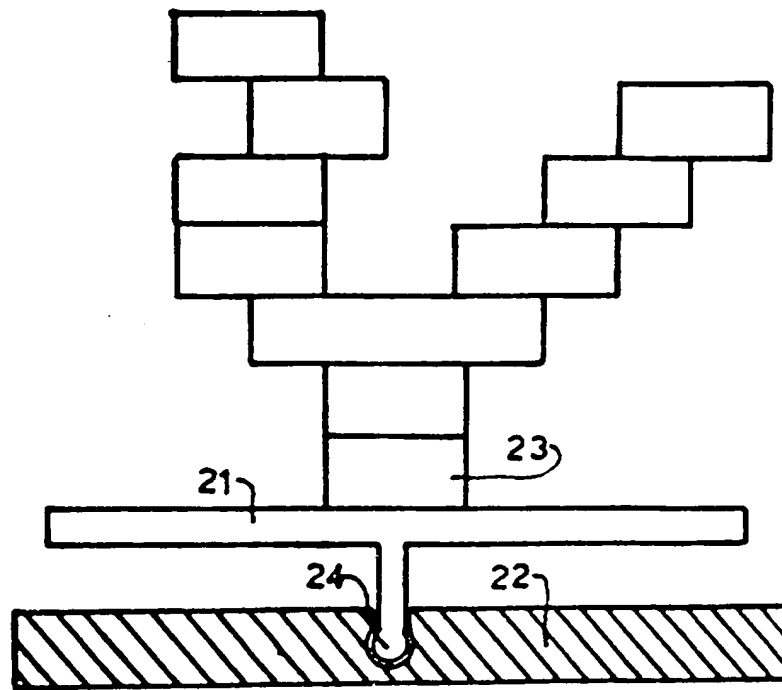


FIG 1

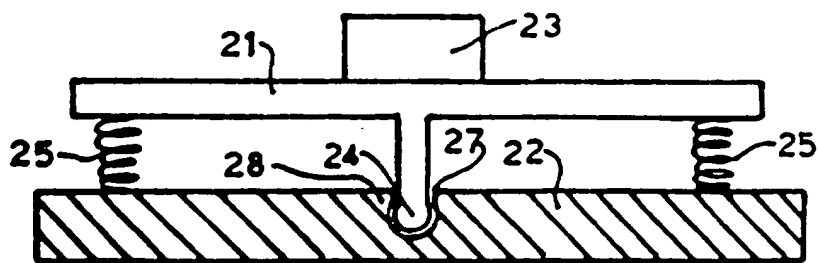


FIG 2

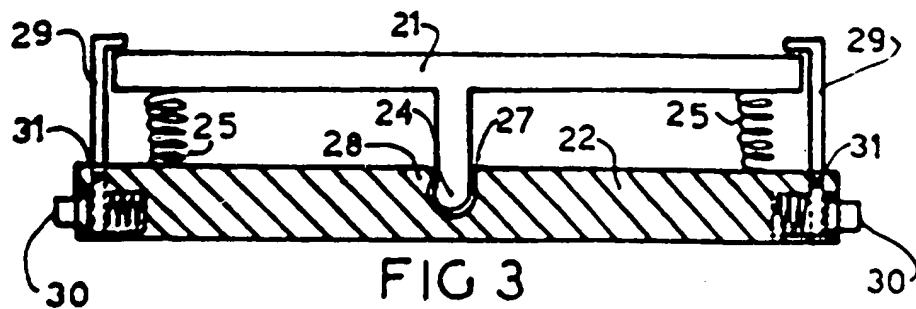
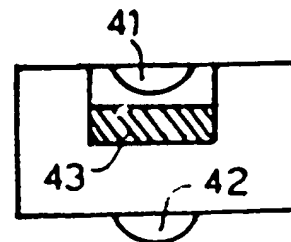
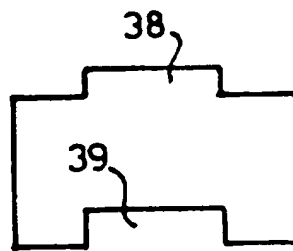
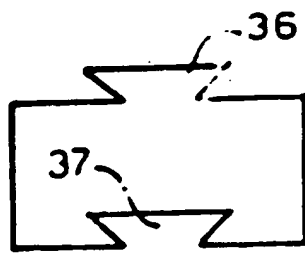
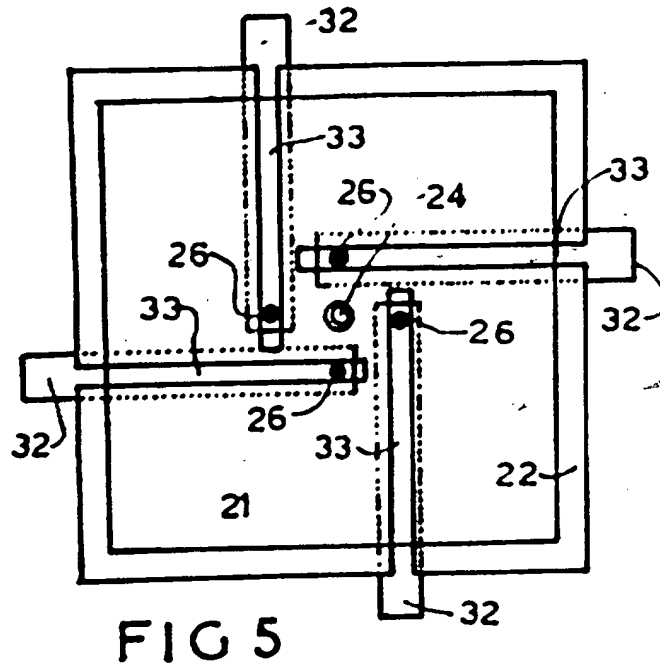
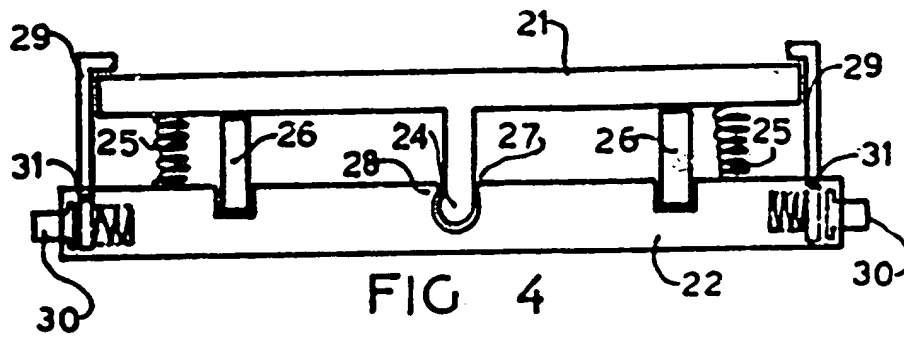


FIG 3



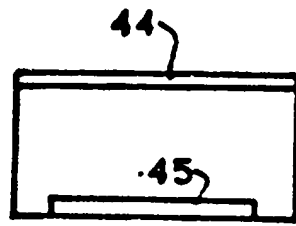


FIG 10

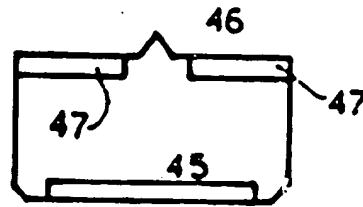


FIG 12

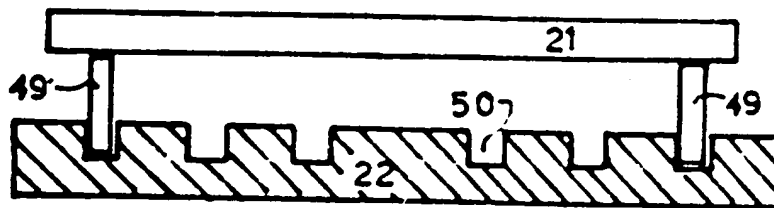


FIG 11

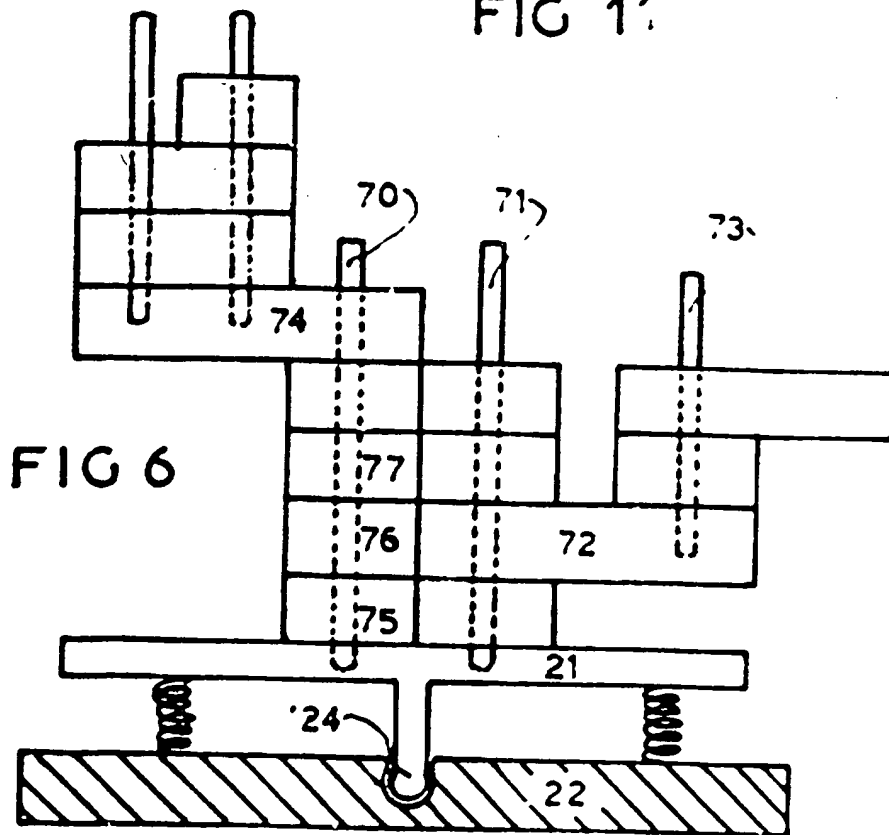


FIG 6

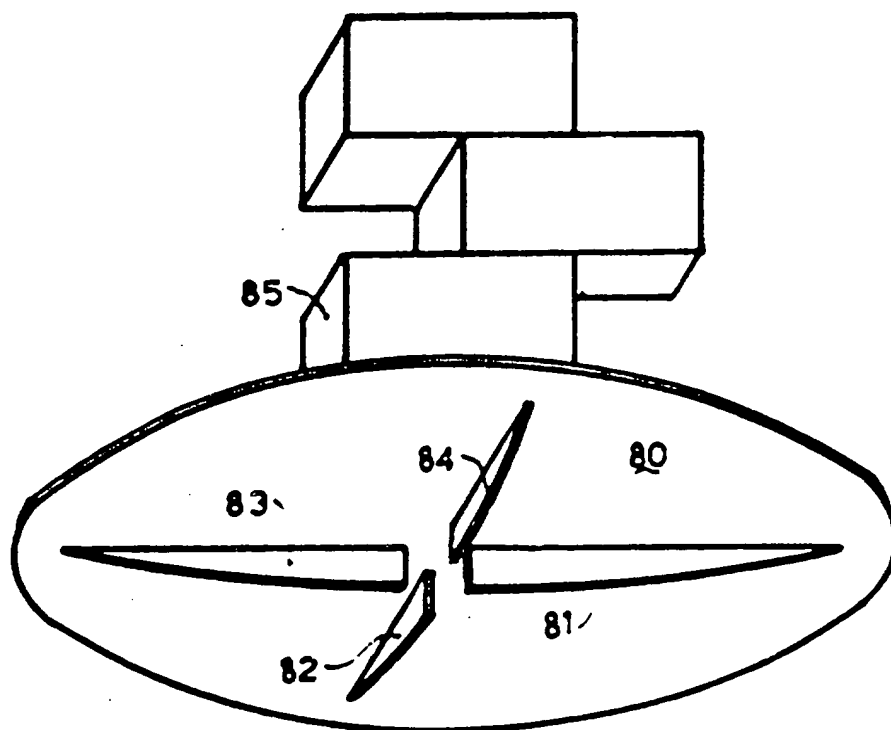
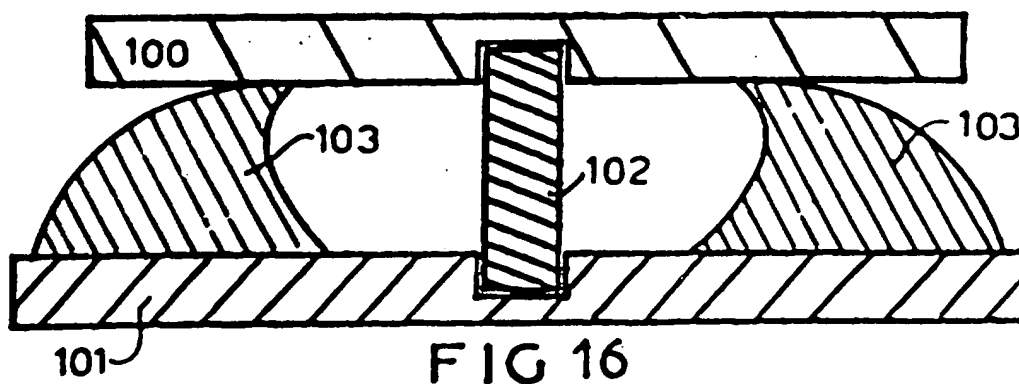
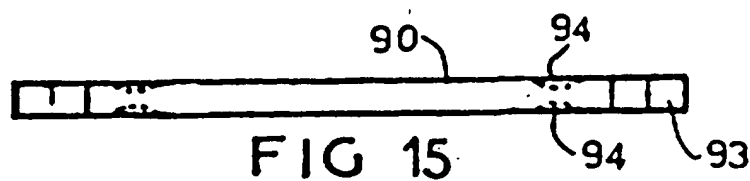
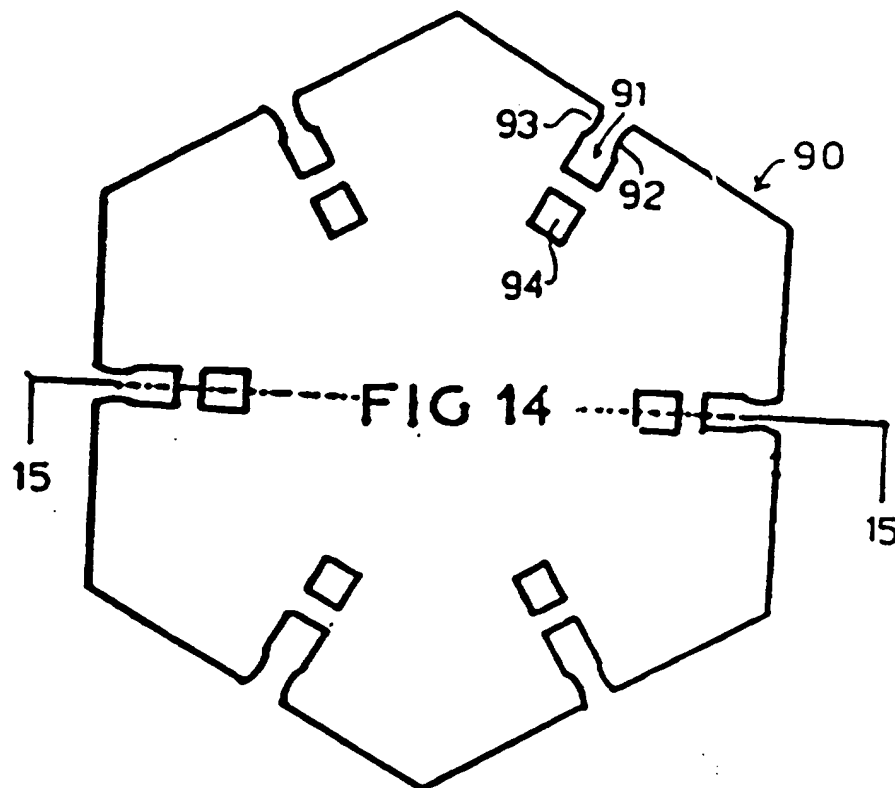


FIG 13



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